Enrollment No: _____

ज्ञानेन प्रकाशते जगत्
INDUS UNIVERSITY

INDUS UNIVERSITY IITE

Constituent Institutes of Indus University

X/EC0319/002

Semester:	III	Branch:	EC/CSE/CE/IT
END SEMESTER EXAMINATION - December 2022			
Subject Code:	EC0319	Subject Name:	Digital Electronics
Date:	08/12/2022	Time:	2:00 PM - 5:00PM
Day:	Thursday	Total Marks:	100

Instructions:

1. Attempt all questions
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicates full marks

Q.1 **A** i. Convert the $(126.25)_{10}$ into binary, octal, hexadecimal. **10**

ii. Perform following Binary addition & Subtraction:
a) 1011+1101+1001+1111
b) 1100.10 - 111.01

B i. Prove the following Boolean Expression: **10**
a) AB +A'C+BC = AB +A'C
b) AB'C +B+BD'+ABD'+A'C = B+C

ii. Simplify following Boolean Expression:
a) [(A+B') (C+D')]'
b) A[B+C'(AB+AC')']

Q.2 **A** i. Implement following logic using only NAND Gate. **10**
F=(A+B') (CD+E')

ii. Expand A (A'+B) (A'+B+C') to Maxtern & Minterm

B Obtain the simplified expressions for the Following Boolean functions: **10**
F(A,B,C,D,E) = Σm (0,2,3,10,11,12,13,16,17,18,19,20,21,26,27)

Q.3 **A** i. Design 2 to 4 line decoder using truth table,logic equation & logic diagram. **10**

ii. Design 2 bit magnitude comparator with truth table,logic equation & logic diagram.

	B	Convert D flip flop to S-R flip flop	**10**
Q.4	**A**	Design 4 bit Serial-In Serial-Out Shift Register with D flip flop & S-R flip flop.	**10**
	B	Design D type counter that goes through 0,1,2,4,0. Unused state must always go to 000.	**10**
Q.5		**Any Four (05*4=20)**	
	A	Implement the following logic function Using 8*1 Multiplexer: $F = \sum m (1,3,4,11,12,13,14,15)$	**05**
	B	Deign 4 bit parallel binary subtractor circuit.	**05**
	C	Design Positive edge triggered J-K flip flop using truth table,logic equation & logic diagram.	**05**
	D	Design 4 bit Parallel-In Parallel-Out Shift Register.	**05**
	E	Design two bit ripple up counter using negative edge triggered flip flop .	**05**
	F	Design Mod 6 asynchronous counter using T flip flop.	**05**